Claims

What is claimed is:

1.   A method for treating a demyelinating neurological disease in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

2.   A method according to claim 1, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

3.   A method for treating a demyelinating neurological disease in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

4.   A method according to claim 1 or claim 3, wherein said modulating agent is linked to a targeting agent.

5.   A method according to claim 1 or claim 3, wherein said modulating agent is linked to a drug.

6.   A method according to claim 1 or claim 3, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

7.   A method according to claim 1 or claim 3, wherein said modulating agent is administered by implantation with Schwann cells.

8.   A method according to claim 1 or claim 3, wherein said modulating agent is administered by implantation with oligodendrocyte progenitor cells and/or oligodendrocytes.

9.   A method according to claim 1 or claim 3, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

10.   A method according to claim 1 or claim 3, wherein said disease is multiple sclerosis.

11.   A method for reducing unwanted cellular adhesion in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits unwanted cadherin-mediated cell adhesion resulting from surgery, injury, disease or inflammation.

12.   A method according to claim 11, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19) and

derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

13.   A method for reducing unwanted cellular adhesion in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

14.   A method according to claim 11 or claim 13, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

15.   A method according to claim 14, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

16.   A method according to claim 11 or claim 13, wherein said modulating agent is linked to a targeting agent.

17.   A method according to claim 11 or claim 13, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

18.   A method according to claim 17, wherein said pharmaceutical composition further comprises a modulator of cell adhesion comprising at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

19.   A method according to claim 18, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

20.   A method for enhancing the delivery of a drug through the skin of a mammal, comprising contacting epithelial cells of a mammal with a cell adhesion modulating agent and a drug, wherein said modulating agent comprises the sequence His-Ala-Val, wherein said modulating agent inhibits cadherin-mediated cell adhesion, and wherein the step of contacting is performed under conditions and for a time sufficient to allow passage of said drug across said epithelial cells.

21.   A method for enhancing the delivery of a drug through the skin of a mammal, comprising contacting epithelial cells of a mammal with a cell adhesion modulating agent and a drug, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, wherein said modulating agent inhibits cadherin-mediated cell adhesion and wherein the step of contacting is performed under conditions and for a time sufficient to allow passage of said drug across said epithelial cells.

22.   A method according to claim 20 or claim 21, wherein said modulating agent passes into the blood stream of said mammal.

23.   A method according to claim 20, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LFGHAVSENG (SEQ ID NO: 20), LFSHAVSSNG (SEQ ID NO: 19), GHAVSE (SEQ ID NO: 26) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

24.   A method according to claim 23, wherein said modulating agent is AHAVSE-NH$_2$ (SEQ ID NO: 27).

25.   A method according to claim 20 or claim 21, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

26.   A method according to claim 25, wherein said cell adhesion recognition sequence comprises a sequence selected from the group consisting of YAT, FAT, YAS, RAL, QSSGSLYGSQ (SEQ ID NO: 16) and QYLYHYCVVD (SEQ ID NO: 17).

27.   A method according to claim 20 or claim 21, wherein said modulating agent is linked to a targeting agent.

28.   A method according to claim 20 or claim 21, wherein said modulating agent is linked to said drug.

29.   A method according to claim 20 or claim 21, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

30.   A method according to claim 29, wherein said pharmaceutical composition further comprises a modulator of cell adhesion comprising one or more of:

(a)   a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b)   an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

31. A method according to claim 30, wherein said cell adhesion recognition sequence comprises a sequence selected from the group consisting of YAT, FAT, YAS, RAL, QSSGSLYGSQ (SEQ ID NO: 16) and QYLYHYCVVD (SEQ ID NO: 17).

32. A method according to claim 30, wherein said antibody or fragment thereof specifically binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

33. A method according to claim 20 or claim 21, wherein the step of contacting is performed via a skin patch comprising said modulating agent and said drug.

34. A method for enhancing the delivery of a drug to a tumor in a mammal, comprising administering to a mammal a cell adhesion modulating agent and a drug, wherein said modulating agent comprises 3-16 amino acid residues, including the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

35. A method for enhancing the delivery of a drug to a tumor in a mammal, comprising administering to a mammal a cell adhesion modulating agent and a drug, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

36. A method according to claim 34 or claim 35, wherein the tumor is selected from the group consisting of bladder tumors, ovarian tumors and melanomas.

37. A method according to claim 34 or claim 35, wherein said composition is administered to said tumor.

38.   A method according to claim 34 or claim 35, wherein said composition is administered systemically.

39.   A method according to claim 34, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LYSHAVSSNG (SEQ ID NO: 18) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

40.   A method according to claim 39, wherein said modulating agent is AHAVSE-NH$_2$ (SEQ ID NO: 27).

41.   A method according to claim 34 or claim 35, wherein said modulating agent is linked to a targeting agent.

42.   A method according to claim 34 or claim 35, wherein said modulating agent linked to said drug.

43.   A method according to claim 34 or claim 35, wherein said modulating agent further comprises one or more of:

(a)   a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker; and/or

(b)   an antibody or antigen-binding fragment thereof that binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

44.   A method according to claim 43, wherein said cell adhesion recognition sequence comprises a sequence selected from the group consisting of YAT, FAT, YAS, RAL, QSSGSLYGSQ (SEQ ID NO: 16) and QYLYHYCVVD (SEQ ID NO: 17).

45.   A method according to claim 44, wherein said antibody or antigen-binding fragment thereof binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

46.   A method according to claim 34 or claim 35, wherein said modulating agent and said drug are present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

47.   A method according to claim 46, wherein said pharmaceutical composition further comprises a modulator of cell adhesion comprising one or more of:

(a)   a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b)   an antibody or antigen-binding fragment thereof that binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

48.   A method according to claim 47, wherein said cell adhesion recognition sequence comprises a sequence selected from the group consisting of YAT, FAT, YAS, RAL, QSSGSLYGSQ (SEQ ID NO: 16) and QYLYHYCVVD (SEQ ID NO: 17).

49.   A method according to claim 47, wherein said antibody or antigen-binding fragment thereof binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

50.   A method for treating cancer in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises 3-16 amino acid residues, including the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

51.   A method for treating cancer in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

52.   A method according to claim 50 or claim 51, wherein said cancer is selected from the group consisting of carcinomas, leukemia and melanomas.

53.   A method according to claim 50, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LYSHAVSSNG (SEQ ID NO: 18), LFSHAVSSNG (SEQ ID NO: 19) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

54.   A method according to claim 50 or claim 51, wherein said modulating agent is linked to a targeting agent.

55.   A method according to claim 50 or claim 51, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

56.   A method according to claim 55, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

57.   A method according to claim 50 or claim 51, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

58.   A method according to claim 51, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

59.   A method according to claim 58, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

60.   A method for inhibiting angiogenesis in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

61.   A method according to claim 60, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

62.   A method for inhibiting angiogenesis in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating

agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

63.   A method according to claim 60 or claim 62, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

64.   A method according to claim 63, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

65.   A method according to claim 60 or claim 62, wherein said modulating agent is linked to a target agent.

66.   A method according to claim 60 or claim 62, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

67.   A method according to claim 66, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

68.   A method according to claim 67, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

69.   A method for enhancing drug delivery to the central nervous system of a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises 3-16 amino acid residues,

including the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

70. A method according to claim 69, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

71. A method for enhancing drug delivery to the central nervous system of a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

72. A method according to claim 69 or claim 71 wherein said modulating agent further comprises one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

73. A method according to claim 72, wherein said cell adhesion recognition sequence is QSSGSLYGSQ (SEQ ID NO: 16) or QYLYHYCVVD (SEQ ID NO: 17).

74. A method according to claim 72, wherein said antibody or fragment thereof specifically binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

75. A method according to claim 69 or claim 71, wherein said modulating agent is linked to a targeting agent.

76. A method according to claim 69 or claim 71, wherein said modulating agent linked to a drug.

77. A method according to claim 69 or claim 71, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

78. A method according to claim 77, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, comprising one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

79. A method according to claim 78, wherein said cell adhesion recognition sequence is QSSGSLYGSQ (SEQ ID NO: 16) or QYLYHYCVVD (SEQ ID NO: 17).

80. A method according to claim 78, wherein said antibody or fragment thereof specifically binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

81.   A method for enhancing wound healing in a mammal, comprising contacting a wound in a mammal with a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

82.   A method according to claim 81, wherein said modulating agent comprises at least two His-Ala-Val sequences separated by a linker.

83.   A method according to claim 81, wherein said modulating agent comprises a sequence selected from the group consisting of LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19), LFGHAVSENG (SEQ ID NO: 20), GHAVSE (SEQ ID NO: 26) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

84.   A method according to claim 83, wherein said modulating agent is LFSHAVSSNG-NH$_2$ (SEQ ID NO: 19), AHAVSE-NH$_2$ (SEQ ID NO: 27), LFGHAVSENG-NH$_2$ (SEQ ID NO: 20) or GHAVSE-NH$_2$ (SEQ ID NO: 26).

85.   A method for enhancing wound healing in a mammal, comprising contacting a wound in a mammal with a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

86.   A method according to claim 81 or 85, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

87.   A method according to claim 86, wherein said cell adhesion recognition sequence comprises one or more of the sequences Arg-Gly-Asp, Tyr-Ala-Thr, Phe-Ala-Thr, Tyr-Ala-Ser or Arg-Ala-Leu.

88.   A method according to claim 81 or claim 85, wherein said modulating agent is linked to a targeting agent.

89.   A method according to claim 81 or claim 85, wherein said modulating agent is linked to a support material.

90.   A method according to claim 81 or claim 85, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

91.   A method according to claim 90, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, comprising one or more of:

(a)   a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b)   an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

92.   A method according to claim 91, wherein said cell adhesion recognition sequence is selected from the group consisting of Arg-Gly-Asp, Tyr-Ala-Thr, Phe-Ala-Thr, Tyr-Ala-Ser or Arg-Ala-Leu.

93.   A method for enhancing adhesion of foreign tissue implanted within a mammal, comprising contacting a site of implantation of foreign tissue in a mammal with a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

94.   A method according to claim 93, wherein said modulating agent comprises at least two His-Ala-Val sequences separated by a linker.

95.   A method according to claim 93, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

96.   A method for enhancing adhesion of foreign tissue implanted within a mammal, comprising contacting a site of implantation of foreign tissue in a mammal with a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

97.   A method according to claim 93 or claim 96, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

98.   A method according to claim 97, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

99.   A method according to claim 93 or claim 96 wherein said modulating agent is linked to a targeting agent.

100.   A method according to claim 93 or claim 96, wherein said modulating agent is linked to a support material.

101.   A method according to claim 93 or claim 96 wherein said foreign tissue is a skin graft or organ implant.

102.   A method according to claim 93 or claim 96, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

103.   A method according to claim 102, wherein said pharmaceutical composition further comprises a modulator of cell adhesion a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

104.   A method according to claim 103, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

105.   A method for inducing apoptosis in a cadherin-expressing cell, comprising contacting a cadherin-expressing cell with a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

106.   A method according to claim 105, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 28), LFSHAVSSNG (SEQ ID NO: 19) and

derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

107. A method for inducing apoptosis in a cadherin-expressing cell, comprising contacting a cadherin-expressing cell with a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

108. A method according to claim 105 or claim 107, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

109. A method according to claim 108, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

110. A method according to claim 105 or claim 107, wherein said modulating agent is linked to a targeting agent.

111. A method according to claim 105 or claim 107, wherein said modulating agent is linked to a drug.

112. A method according to claim 105 or claim 107, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

113. A method according to claim 112, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

114. A method according to claim 113, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

115. A method for modulating the immune system of a mammal, comprising administering to a mammal a pharmaceutical composition comprising a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

116. A method according to claim 115, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

117. A method for modulating the immune system of a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

118. A method according to claim 115 or claim 117, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

119. A method according to claim 118, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

120. A method according to claim 115 or claim 117, wherein said modulating agent is linked to a targeting agent.

121. A method according to claim 115 or claim 117, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

122. A method according to claim 121, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

123. A method according to claim 122, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

124. A method for preventing pregnancy in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

125. A method according to claim 124, wherein said modulating agent comprises a sequence selected from the group consisting of LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

126. A method for preventing pregnancy in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

127. A method according to claim 124 or claim 126, wherein said modulating agent further comprises at least one cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, and wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker.

128. A method according to claim 127, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

129. A method according to claim 124 or claim 126, wherein said modulating agent is linked to a targeting agent.

130. A method according to claim 124 claim 126, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

131. A method according to claim 130, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, wherein said modulator comprises a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

132. A method according to claim 131, wherein said cell adhesion recognition sequence comprises the sequence Arg-Gly-Asp.

133. A method according to claim 124 or 126, wherein the step of administration is performed by intravaginal insertion of a device containing said modulating agent.

134. A method for increasing vasopermeability in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said

modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

135. A method according to claim 134, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the foregoing sequences having C-terminal, N-terminal and/or side chain modifications.

136. A method for increasing vasopermeability in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

137. A method according to claim 134 or claim 136, wherein said modulating agent is linked to a targeting agent.

138. A method according to claim 134 or claim 136 wherein said modulating agent further comprises one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

139. A method according to claim 138, wherein said cell adhesion recognition sequence is QSSGSLYGSQ (SEQ ID NO: 16) or QYLYHYCVVD (SEQ ID NO: 17).

140. A method according to claim 139, wherein said antibody or fragment thereof specifically binds to the sequence GVNPTAQSSGSLYGSQI YALCNQFYTPAATGLYVDQYLYHYCVVDPQE (SEQ ID NO: 15).

141. A method according to claim 134 or claim 136, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

142. A method according to claim 141, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, comprising one or more of:

(a)   a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b)   an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

143. A method according to claim 142, wherein said cell adhesion recognition sequence is an occludin cell adhesion recognition sequence.

144. A method according to claim 142, wherein said antibody or fragment thereof specifically binds to an occludin cell adhesion recognition sequence.

145. A method for enhancing and/or directing neurite outgrowth, comprising contacting a neuron with a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

146. A method according to claim 145, wherein said modulating agent comprises at least two His-Ala-Val sequences separated by a linker.

147. A method according to claim 145, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

148. A method for enhancing and/or directing neurite outgrowth, comprising contacting a neuron with a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

149. A method according to claim 145 or claim 148 wherein said modulating agent is linked to a targeting agent.

150. A method according to claim 145 or claim 148 wherein said modulating agent further comprises one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

151. A method according to claim 150, wherein said cell adhesion recognition sequence is selected from the group consisting of Arg-Gly-Asp, Tyr-Ile-Gly-Ser-Arg (SEQ ID NO: 12) and Lys-Tyr-Ser-Phe-Asn-Tyr-Asp-Gly-Ser-Glu (SEQ ID NO: 13).

152. A method according to claim 150, wherein said antibody or fragment thereof specifically binds to an N-CAM cell adhesion recognition sequence.

153. A method according to claim 145 or claim 148, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

154. A method according to claim 153, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, comprising one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

155. A method according to claim 154, wherein said cell adhesion recognition sequence is selected from the group consisting of Arg-Gly-Asp, Tyr-Ile-Gly-Ser-Arg (SEQ ID NO: 12) and Lys-Tyr-Ser-Phe-Asn-Tyr-Asp-Gly-Ser-Glu (SEQ ID NO: 13).

156. A method according to claim 154, wherein said antibody or fragment thereof specifically binds to an N-CAM cell adhesion recognition sequence.

157. A method according to claim 145 or claim 148, wherein said modulating agent is linked to a solid support.

158. A method for treating spinal cord injuries in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

159. A method according to claim 158, wherein said modulating agent comprises at least two His-Ala-Val sequences separated by a linker.

160. A method for treating spinal cord injuries in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

161. A method according to claim 158 or claim 160, wherein said modulating agent further comprises one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

162. A method according to claim 161, wherein said cell adhesion recognition sequence comprises a sequence selected from the group consisting of Arg-Gly-Asp, Tyr-Ile-Gly-Ser-Arg (SEQ ID NO: 12) and Lys-Tyr-Ser-Phe-Asn-Tyr-Asp-Gly-Ser-Glu (SEQ ID NO: 13).

163. A method according to claim 161, wherein said antibody or fragment thereof specifically binds to an N-CAM cell adhesion recognition sequence.

164. A method according to claim 158, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28) and derivatives of the

foregoing sequences having one or more C-terminal, N-terminal and/or side chain modifications.

165. A method according to claim 158 or claim 160, wherein said modulating agent is linked to a targeting agent.

166. A method according to claim 158 or claim 160, wherein said modulating agent is present within a pharmaceutical composition comprising a pharmaceutically acceptable carrier.

167. A method according to claim 166, wherein said pharmaceutical composition further comprises a modulator of cell adhesion, comprising one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

168. A method according to claim 167, wherein said cell adhesion recognition sequence is selected from the group consisting of Arg-Gly-Asp, Tyr-Ile-Gly-Ser-Arg (SEQ ID NO: 12) and Lys-Tyr-Ser-Phe-Asn-Tyr-Asp-Gly-Ser-Glu (SEQ ID NO: 13).

169. A method according to claim 167, wherein said antibody or fragment thereof specifically binds to an N-CAM cell adhesion recognition sequence.

170. A method according to claim 158 or claim 160, wherein said modulating agent is linked to a solid support.

171. A method for inhibiting synaptic stability in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said

modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

172. A method according to claim 171, wherein said modulating agent comprises a sequence selected from the group consisting of LRAHAVDING (SEQ ID NO: 21), LRAHAVDVNG (SEQ ID NO: 22), MRAHAVDING (SEQ ID NO: 23), HLGAHAVDINGNQVET (SEQ ID NO: 24), FHLRAHAVDINGNQV (SEQ ID NO: 25), LYSHAVSSNG (SEQ ID NO: 18), AHAVSE (SEQ ID NO: 27), AHAVDI (SEQ ID NO: 28), SHAVSS (SEQ ID NO: 29), LFSHAVSSNG (SEQ ID NO: 19) and derivatives of the foregoing sequences having C-terminal, N-terminal and/or side chain modifications.

173. A method for inhibiting synaptic stability in a mammal, comprising administering to a mammal a cell adhesion modulating agent, wherein said modulating agent comprises an antibody or fragment thereof that specifically binds to a cadherin cell adhesion recognition sequence, and wherein said modulating agent enhances cadherin-mediated cell adhesion.

174. A method according to claim 171 or claim 173, wherein said modulating agent further comprises one or more of:

(a) a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin, wherein said cell adhesion recognition sequence is separated from any His-Ala-Val sequence(s) by a linker; and/or

(b) an antibody or antigen-binding fragment thereof that specifically binds to a cell adhesion recognition sequence bound by an adhesion molecule other than a classical cadherin.

175. A method according to claim 174, wherein said cell adhesion recognition sequence is Lys-Tyr-Ser-Phe-Asn-Tyr-Asp-Gly-Ser-Glu (SEQ ID NO:12).

176. A method according to claim 174, wherein said antibody or fragment thereof specifically binds to an N-CAM cell adhesion recognition sequence.

177. A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a) contacting Schwann cells with an astrocytic surface in the presence of candidate modulating agent;

(b) washing said astrocytic surface to remove non-attached cells; and

(c) comparing the number of Schwann cells attached to said astrocytic surface with the number of Schwann cells attached to an astrocytic surface in the absence of candidate modulating agent, and therefrom identifying an agent capable of modulating cadherin-mediated cell adhesion.

178. A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a) contacting Schwann cells with polylysine- and/or laminin-coated surface in the presence of candidate modulating agent;

(b) washing said surface to remove non-attached cells;

(c) contacting attached Schwann cells with an astrocyte-coated surface; and

(d) comparing the migration of said attached Schwann cells with the migration in the absence of candidate modulating agent, and therefrom identifying an agent capable of modulating cadherin-mediated cell adhesion.

179. A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a) culturing neurons on a monolayer of cells that express N-cadherin in the presence and absence of a candidate agent, under conditions and for a time sufficient to allow neurite outgrowth, wherein said cells are transfected with a

polynucleotide encoding N-cadherin and wherein said cells do not express a detectable level of N-cadherin in the absence of transfection with such a polynucleotide;

(b)   determining a mean neurite length for said neurons; and

(c)   comparing the mean neurite length for neurons cultured in the presence of candidate agent to the neurite length for neurons cultured in the absence of candidate agent, and therefrom identifying a modulating agent capable of modulating cell adhesion.

180.   A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a)   culturing cells that express a cadherin in the presence and absence of a candidate agent, under conditions and for a time sufficient to allow cell adhesion; and

(b)   visually evaluating the extent of cell adhesion among said cells, and therefrom identifying an agent capable of modulating cell adhesion.

181.   A method according to claim 180, wherein said cells are selected from the group consisting of endothelial, epithelial and cancer cells.

182.   A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a)   culturing normal rat kidney cells in the presence and absence of a candidate agent, under conditions and for a time sufficient to allow cell adhesion; and

(b)   comparing the level of cell surface E-cadherin for cells cultured in the presence of candidate agent to the level for cells cultured in the absence of candidate agent, and therefrom identifying an agent capable of modulating cell adhesion.

183.   A method for identifying an agent capable of modulating cadherin-mediated cell adhesion, comprising:

(a)   contacting an epithelial surface of skin with a test marker in the presence and absence of candidate agent; and

(b)   comparing the amount of test marker that passes through said skin in the presence of candidate agent to the amount that passes through skin in the absence of candidate agent, and therefrom identifying an agent capable of modulating cell adhesion.

184.   A method for detecting the presence of cadherin-expressing cells in a sample, comprising:

(a)   contacting a sample with an antibody that binds to a modulating agent comprising the sequence His-Ala-Val under conditions and for a time sufficient to allow formation of an antibody-cadherin complex; and

(b)   detecting the level of antibody-cadherin complex, and therefrom detecting the presence of cadherin expressing cells in a sample.

185.   A method according to claim 184, wherein said antibody is linked to a support material.

186.   A method according to claim 184, wherein said antibody is linked to a detectable marker.

187.   A method according to claim 186, wherein said detectable marker is a fluorescent marker, and wherein the step of detecting is performed using fluorescence activated cell sorting.

188.   A kit for detecting the presence of cadherin-expressing cells in a sample, comprising:

(a)   an antibody that binds to a modulating agent comprising the sequence His-Ala-Val; and

(b)   a detection reagent.

189. A kit for enhancing transdermal drug delivery, comprising:

(a)   a skin patch; and

(b)   a cell adhesion modulating agent, wherein said modulating agent comprises the sequence His-Ala-Val, and wherein said modulating agent inhibits cadherin-mediated cell adhesion.

190. A kit according to claim 189, further comprising a drug.

191. A method for identifying a compound capable of modulating cadherin-mediated cell adhesion, comprising:

(a)   contacting an antibody that binds to a modulating agent comprising the sequence His-Ala-Val with a test compound; and

(b)   detecting the level of antibody that binds to the test compound, and therefrom identifying a compound capable of modulating cadherin-mediated cell adhesion.